

**I CLAIM AS MY INVENTION:**

1 A voltage regulation system for a spatially remote user, comprising:

- an adjustable voltage supply for the user;
- a measuring circuit producing a measured signal allocated to the user;
- a sensor line for transmission of said measured signal; and
- a setting device connected to the voltage supply.

2. The voltage regulation system according to claim 1 wherein the measuring circuit comprises a comparator that compares a voltage present at the user to a voltage of a reference voltage source.

3. The voltage regulation system according to claim 1 wherein the setting device comprises an integrator that influences a setting element of the adjustable voltage supply.

4. The voltage regulation system according to claim 1 wherein the setting device comprises a resistor connecting the sensor line to an input of an inverting operational amplifier, an output of the inverting operational amplifier connecting to control the voltage supply, and a capacitor being connected between an output of the inverting operational amplifier and said inverting operational amplifier input.

5. A voltage regulation system, comprising:

a voltage regulator comprising a variable voltage supply, and a setting circuit connected to vary the voltage supply;

a remote user having first and second voltage supply lines each having an associated line resistance and connecting the voltage supply of the voltage regulator to a load of the remote user; and

at the user, a measuring circuit having as an input a sensed signal from the load and an output connected via a single sensor line only to an input of said setting circuit.

6. The system according to claim 5 wherein the measuring circuit comprises an operational amplifier having a constant reference voltage source at one input and said sensed signal from said user load at the other input.

7. The system according to claim 5 wherein said setting circuit comprises an inverting operational amplifier having its output connected to said voltage supply and its input connected to said sensor line.

8. The system according to claim 7 wherein said inverting operational amplifier has a capacitor connected between its input and its output and comprises an integrator.

9. A method for regulating a remote user, comprising the steps of:  
providing a voltage supply positioned remotely from said remote user;

providing a measurement circuit at said remote user which outputs a signal indicative of an operating condition of a load of said remote user, said signal being sent on single sensor line only; and

adjusting said voltage supply located remotely from said user by use of said signal from said single sensor line.

10. The method according to claim 9 wherein said signal is integrated for control of said voltage supply.

11. The system according to claim 9 wherein said signal on said single sensor line is digital.